

PATENT CLAIMS

1. Device for connecting a fixing region of a guide rail (1) to the door body (2) of a vehicle door which has on an outer surface area an opening (25) through which a fixing means (6) can be fitted

characterised by

a guide part (3a) which can be inserted into an outer surface area (20) of the door body containing the opening (25) and which can be connected to same to hold the fixing means (6) and the fixing region (10) of the guide rail.

2. Device according to claim 1, **characterised in that** the fixing region (10) of the guide rail (1) can be adjusted inside the guide part (3a) in the direction of the vehicle transverse axis (Y-axis).

3. Device according to claim 1 or 2, **characterised in that** the guide part (3a) which can be pre-positioned on the fixing region (10) of the guide rail (1) can be adjusted in the direction of the vehicle longitudinal axis (X-axis) opposite the outer surface area (20) of the door body (2).

4. Device according to at least one of the preceding claims, **characterised in that** the guide part (3a) is in two parts and has a cover (5) which can be connected to a base plate (4) wherein a part (60) of the fixing means (6) is mounted with positive locking connection between same, and a part of the fixing region (10) of the guide rail (1) is arranged displaceable perpendicular to the plane of the vehicle door (Y-axis).

5. Device according to claim 4, **characterised in that** the base plate (4) and the cover (5) of the guide part (3a) are connected together through a hinge, preferably a film hinge (36) and that the guide part (3a) is designed as a plastics moulded part in the manner of a cassette.
6. Device according to at least one of the preceding claims, **characterised in that** the guide part (3a) has a convex stop (52) which is directed to one side edge of the fixing region (10) of the guide rail (1).
7. Device according to at least one of the preceding claims, **characterised in that** the base plate (4) and the cover (5) of the guide part (3a) are connected together through mutually aligned positive locking and connecting elements (45, 46; 55, 56) , that the cover (5) of the guide part (3a) has a closing clip (55) which protrudes from the inside of the cover (5) and which when the guide part (3a) is closed engages in a closing opening (45) of the base plate (4) of the guide part (3a) , that a positive locking element (56) protrudes from a raised surface (54) of the cover and when the guide part (3a) is closed engages in an opening (46) of the base plate (4) adapted to the cross-sectional shape of the positive locking element (56) and that the positive locking element is formed as a web (56) which protrudes from the raised surface (54) of the cover (5) of the guide part (3a) and runs in the direction of the Y-axis when the guide part (3a) is fitted and that the counter positive locking element consists of an oblong hole (46) which is mounted in the base plate of the guide part (3a).
8. Device according to at least one of the preceding claims, **characterised in that** the guide part (3a) has a pre-setting element (51) which can be connected with positive locking engagement to the fixing region (10) of the guide rail (1) and which consists of a spring element which is connected to the cover (5) or the base plate (4) of the guide part (3a), is let into the cover (5) or

the base plate (4) of the guide part (3a) or is shaped out from the surface of the cover (5) or base plate (4) of the guide part (3a), wherein the spring element has a projection which engages with positive locking connection into an opening (19) of the fixing region (10) of the guide rail (1).

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9. Device according to at least one of the preceding claims, **characterised in that** fixing clips (41 to 44) protrude from the base plate (4) of the guide part (3a) and engage in slots (21 to 24) running parallel to the X-axis with the length in the outer surface area (20) of the door body (2) which corresponds to the adjustment in the direction of the X-axis.
10. Device according to at least one of the preceding claims, **characterised in that** the fixing means (6) consist of a fixing screw (60) connected to the guide part (3a) and of a fixing nut (61) which can be screwed from outside of the outer surface area (20) of the door body (2) onto the thread (64) of the fixing screw (60) and that the screw head (63) of the fixing screw (60) is inserted with positive locking action into a screw head socket (50) of the cover (5) of the guide part (3a).
11. Device according to at least one of the preceding claims, **characterised in that** an adjusting lever (11) protrudes angled from the fixing region (10) of the guide rail (1) and engages through an opening (25) provided in the outer surface area (20) of the door body (2) and can be operated from outside of the door body (2).
12. Device according to at least one of the preceding claims, **characterised in that** the guide rail (1) and the fixing region (10) of the guide rail (1) and the guide part (3a) form one pre-assembled unit with the fixing means (6) inserted therein.

13. Device for connecting the fixing region of a guide rail (1) to the door body (2) of a vehicle door which has on an outer surface area an opening (25) through which a fixing means can be fitted,

5 **characterised by**

10 a guide part (3b) which is prefitted on the fixing region (10) of the guide rail (1) and can be connected to the door body (2) and which receives a first part (61) of the multi-part fixing means (6), a device (8, 12, 15) for aligning the fixing region (10) of the guide rail (1) to the guide part (3b) and to the door body (2) at least in the direction of the vehicle transverse axis (Y-axis) and a second part (60) of the fixing means (6) for producing a clamping connection between the fixing region (10) of the guide rail (1) and the door body (2).

- 15 14. Device according to claim 13, **characterised in that** the guide part (3b) is formed in one piece and on the side of the fixing region (10) remote from the door body (2) is connected displaceable and with positive locking engagement to the fixing region (10) of the guide rail (1).

- 20 15. Device according to claim 13 or 14, **characterised in that** a part of the fixing means (6) is pushed through a slot opening (12) running in the direction of the vehicle transverse axis (Y-axis) in the fixing region (10) of the guide rail (1).

- 25 16. Device according to at least one of the preceding claims, **characterised in that** the fixing region (10) of the guide rail (1) has a contact bearing face (11) and edge zones (13,14) angled from the contact bearing face (11) and running parallel to the slot opening (12) , and that the guide part (3b) engages clip-like round the edge zones (13, 14) and can be inserted with its studs (31, 32) with positive locking connection into positioning openings (27, 28) of the door body (2).
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17. Device according to claim 16, **characterised in that** to connect a double strand cable window lifter to the door body of a vehicle door the slot opening is in the fixing region of a guide rail wider than the part of the fixing means pushed through the slot opening and the clip-like studs of the guide part associated with the fixing region of the guide rail engage with play in the direction of the vehicle longitudinal axis (X-direction).
18. Device according to claim 16 or 17, **characterised in that** the one angled edge zone (14) of the fixing region (10) of the guide rail (1) has positive locking elements (15) with which counter positive locking elements of a tool (8) which can be inserted into a pot shaped tool socket (35) of the one stud (32) of the guide part (3b) open to the door body (2), can be brought into engagement, and that in the other stud (31) of the guide part (3b) there is a bearing bead (36) which bears against the outer edge of the angled edge zone (13) of the fixing region (10) of the guide rail (1) engaged by this stud (31) .
19. Device according to at least one of the preceding claims 13 to 18, **characterised by** a detent connection (16, 34, 37) which engages in a nominal position of the guide part (3b) relative to the fixing region (10) of the guide rail (1) and which consists of an opening (16) provided in the one angled edge zone (13) of the fixing region (10) of the guide rail (1) and of a detent catch (37) of the guide part (1) engaging in the opening (16) and having a ball head which engages in the opening (16) of the fixing region (10) of the guide rail (1).

20. Device according to claim 19, **characterised in that** the detent catch (16) or ball head can be released from its connection with the opening (16) of the fixing region (10) of the guide rail (1).

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21. Device according to at least one of the preceding claims, **characterised in that** the fixing means (6) consists of the connection of a fixing screw (60) with a fixing nut (61) and that the guide part (3b) holds the fixing screw (60) or fixing nut (61) of the fixing means (6) in a fixing means socket (33) which
10 secures the fixing screw (60) or fixing nut (61) in the axial direction of the fixing screw (60) and in the rotational direction.